

ASOS MODIFICATION NOTE 35 (for Electronics Technicians)

Engineering Division

W/OSO321:BGM

SUBJECT : Upgrade to the ASOS Heating Tipping Bucket and Wind Skirt

PURPOSE : To add operational enhancements for the ASOS Heating Tipping Bucket.

EQUIPMENT AFFECTED : ASOS Heated Tipping Bucket (AHTB) S100-2MT6.

PARTS REQUIRED : Frame Assembly W/ Reed switch, Bar Magnet, Tipping Bucket and Polyethylene stops P/N B-3000-724 (1 ea.), Compression Adapter P/N 5K117 (1 ea.), Nameplate P/N 7405HA-40 (1 ea.), Wind Skirt Attachment Device, and P/N 2125-00201 (1 ea.).

MOD PROCUREMENT : WSH will issue one Wind Skirt device (S100-FMK 049A) for each site that has an alter wind shield. WSH will issue one frame assembly, (S100-2MT6A2A1-1), and one funnel and label kit, (S100-FMK 049B) for each ASOS.

SPECIAL TOOLS REQUIRED : None

TIME REQUIRED : 2 hours

EFFECT ON OTHER INSTRUCTIONS : None

AUTHORIZATION : This modification is authorized by Engineering Change Proposals E92SM05F058, E93SM05F065, E93SM05F096, E94SM05F116, and APO005.

VALIDATION STATEMENT : This modification was successfully tested at the Test and Evaluation Branch in Sterling, Virginia, WSH, and test sites listed in Appendix A.

GENERAL:

Modification Note 35 provides instructions for replacing the ASOS tipping bucket gauge frame assembly which includes the polyethylene stops, reed switch, and a bar magnet. This note also provides instructions for replacement of the tubing and plastic clamps for the wind skirt, the funnel extension, and configuration labels. The current gauges will be modified with a redesigned frame assembly, reed switch and bar magnet (ASN S100-2MT6A2A1-1). A two-way aluminum connector, for the heated tipping bucket (HTB) wind skirt, will replace the tubing and clamps located on the lower ring attachment devices (ASN S100-2MT6A3MP1-1). The funnel extension and configuration labels are attached to the funnel and the outside of the tipping bucket respectively.

The brass stops have been replaced with a polyethylene material that prevents sticking. The funnel extension was added to improve the accuracy of the rain gage. The tubing and plastic clamps are replaced with a two-way aluminum connector, similar to the one used on the upper ring. The new frame assembly reed switch and a bar magnet are factory assembled and calibrated before being shipped. Do not adjust the reed switch. Do not interchange the tipping buckets and frames.

BEFORE STARTING INSTALLATION

1. Call the AOMC at 1-800-242-8194 and provide notification on which ASOS you will be installing the modification.
2. Get approval of the responsible MIC/OIC before starting installation. You may install on any day of the month.
3. Make the appropriate SYSLOG entries (MAINT-ACT-FMK) **Mod 35**.
 - a. Log on as **TECH**.
 - b. Key the **MAINT** screen.
 - c. Key the **ACT** page.
 - d. Key **START** - Stop here and perform **Mod 35**.
 - e. Upon completion of **Mod 35**, log onto the system.
4. Follow the instructions for ASOS Modification Note 35, starting on page 3 and continuing until the these procedures are completed.

REMOVAL OF FRAME ASSEMBLY, WITH MERCURY SWITCH/REED SWITCH AND HORSE SHOE MAGNET
INSTALLATION OF FRAME ASSEMBLY WITH REED SWITCH AND BAR MAGNET
INSTALLATION OF COMPRESSION FITTING
REMOVAL AND INSTALLATION OF NAME PLATE
REMOVAL AND INSTALLATION OF WIND SKIRT ATTACHMENT DEVICES

AFTER COMPLETING INSTALLATION

5. Run the 10 tip test to confirm that the tipping bucket is operating correctly. If the test passes go to next step. If tipping bucket fails test, order a tipping bucket frame assembly from NLSC.
6. Inform the office staff that ASOS is again operational. The chart below indicates how long it takes after a start up for ASOS to report the observation element automatically.

Times Needed for Elements to be Reported Automatically

	<u>Minimum</u>	<u>Maximum</u>
Precipitation Type	2 minutes	*

* Maximum time not applicable since phenomena may not be present. Minimum time applies if phenomena are present.

7. Verify that ASOS transmitted an hourly observation. Call the AOMC at 1-800-242-8194 and tell the operator:
 - a. Your location (SID).
 - b. That ASOS is operational.
8. Enter in the SYSLOG that maintenance has been completed.
 - a. Key the **MAINT** screen.
 - b. Key the **ACT** page.
 - c. Key **FMK** - Enter the Field Mod Kit (FMK) number as follows: **Mod 35**
On the second line of the screen verify that only **Mod 35** is displayed. Complete by entering **Y** in the Y/N if only **Mod 35** is displayed.
 - d. Check the **SYSLOG** and verify the **FMK** message.

PROCEDURE:

REMOVAL OF FRAME ASSEMBLY, WITH MERCURY SWITCH/REED SWITCH AND HORSESHOE MAGNET AND TIPPING BUCKET

1. At the DCP, turn the heating tipping bucket (HTB.) circuit breaker to **OFF** (right) position.
2. Loosen the two knobs on the HTB, and remove the top assembly.

NOTE: Horseshoe magnets are attached to the tipping bucket by a cotter pin.
The bar magnet is attached by epoxy.

3. Remove the tipping bucket from the frame.
4. Remove two screws from the ends of the frame assembly. Keep the two screws removed.

WARNING: While doing step five do not allow the two wires being disconnected to touch. This will prevent battery drain.

5. Disconnect the wiring harness two wires from the transmitter to the bucket frame terminal board 2MT6A2A1TB1.

NOTE: Do not break the glass housing of the mercury switch, if installed. (mercury is a hazardous material).

6. Remove the mercury switch from the mounting bracket, if installed, and carefully pack the mercury switch to prevent breakage.
7. Remove the tipping bucket from the frame assembly. Carefully pack the tipper separate from the frame to prevent damage.
8. This concludes the removal of the frame assembly.

INSTALLATION OF FRAME ASSEMBLY AND REED SWITCH

1. Install the frame assembly in the rain gauge using the two screws removed in step three of the removal procedure.
2. Unpack and install the tipping bucket in the frame assembly being sure the magnet is on the same side as the reed switch. Ensure the tipping bucket moves freely.
3. Connect the wiring harness two wires from the transmitter to the bucket frame terminal board 2MT6A2A1TB1.

NOTE: Do not attempt to adjust the reed switch. The reed switch is factory adjusted and should not be adjusted.

4. This concludes the installation of the frame assembly and reed switch.

SHIPPING INSTRUCTIONS

After the modification has been accomplished, carefully package the frame assembly for shipment to the National Reconditioning Center (NRC). Complete and attach a WS Form H-14 for each component returned. Wrap the tipping bucket, mercury switch, (ensure that a **HAZMAT** label is applied to the mercury switch package when appropriate) and the frame assembly separately in packing material and return to the NRC, use ASN S100-2MT6A2A1-OLD.

INSTALLATION OF COMPRESSION FITTING.

NOTE: If a compression fitting was previously installed on the rain gauge, skip this procedure.

1. Turn collector assembly of the rain gauge over so the bottom is facing you.
2. Install the compression fitting adapter (part of S100-FMK049B) over the spout of the funnel. Ensure that the adapter is well seated over the funnel. If the compression fitting adapter does not seat correctly, check for burrs on the funnel. Remove any burrs found on the funnel.
3. Using two wrenches, tighten the compression fitting until the adapter is secured to the rain gauge funnel.
4. Install the collector assembly onto the rain gauge. Check that the collector assembly is properly seated. Tighten the knobs on the side of the rain gauge.
5. This completes the installation of the compression fitting adapter procedure.

REMOVAL AND INSTALLATION OF NAMEPLATE

1. Remove the four screws holding the nameplate to the side of the rain gauge.
2. Attach the new nameplate (S100-FMK 049B) to the rain gauge using the four screws removed in step one.
3. This completes the Installation of nameplate procedure.

REMOVAL AND INSTALLATION OF WIND SKIRT ATTACHMENT DEVICES

1. At the lower end of the wind skirt assembly remove one of the existing devices.
2. Reference attached drawing figure 1, and replace the removed assembly with a wind skirt attachment device P/N 2125 - 00201.
3. Repeat the process until all three existing attachment devices on the lower ring of the wind skirt are replaced.
4. This completes the Installation of wind skirt attachment devices.
Restore power and return to step 5 on page 3 " AFTER COMPLETING INSTALLATION."

REPORTING MODIFICATION

Reporting Modification

Target date for completion of this modification is 30 days after receipt of parts. Report completed modification on a Weather Service Form A-26 maintenance record, using instructions in EHB-4, Part 2, Appendix F, using reporting code **AHTB**. Record completion of MOD 35 in block 17a of the A-26 Form. (see attachment for a completed sample of WS Form A-26).

John McNulty
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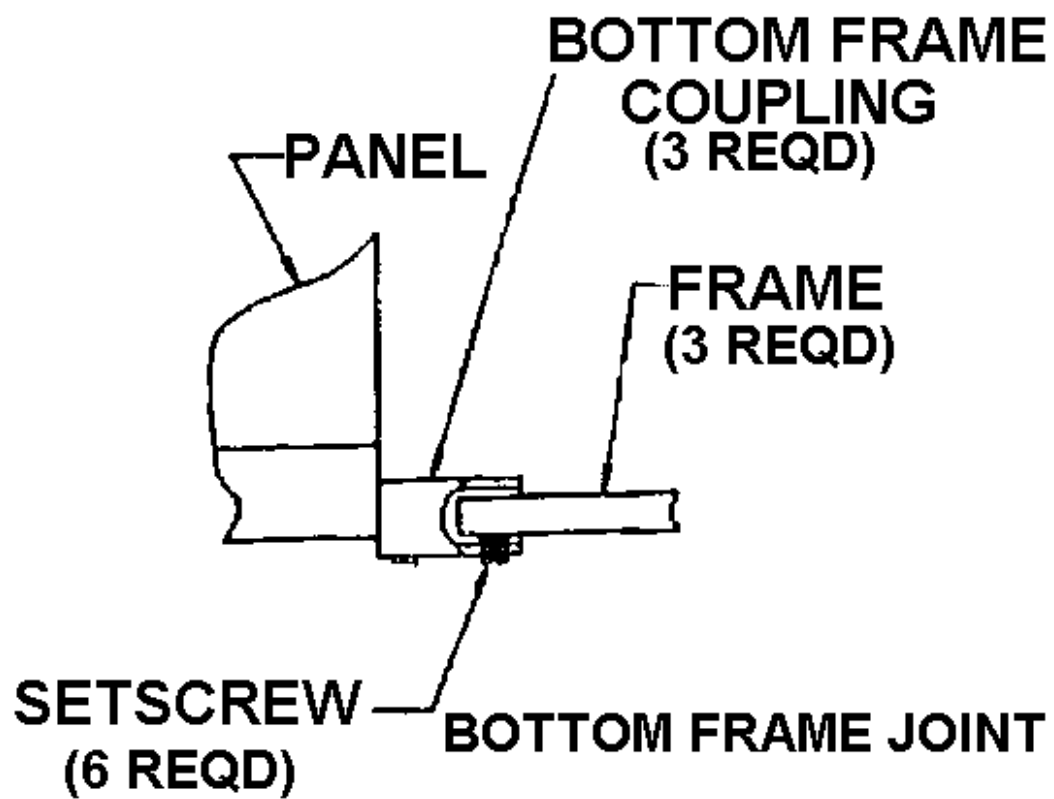


FIGURE 1

The following 12 sites will receive modified frame assemblies for testing.

REGION	SID
CENTRAL	JKL, PAH, SGF
EASTERN	CAE, GSP, ILM
SOUTHERN	AMA, BRO, LCH, JAN
WESTERN	AST, SEA